

***What Is Claimed Is:***

1. A device for generating a mist, comprising:
  - (a) a high pressure pump (29) having a pump chamber (6) connected to a high pressure compartment (30) in a gas/liquid container (39);
  - (b) a gas reservoir (24) connected to said pump chamber by a gas pipe (11);
  - (c) a liquid reservoir (13) connected to said pump chamber by a liquid pipe (10);
  - (d) a gas/liquid container (39) comprising a high pressure compartment (30) and a low pressure compartment (40), wherein:
    - (i) said high pressure compartment (30) is connected to said pump chamber (6);
    - (ii) there are one or more orifices (20) within said high pressure compartment (30) that, when open, connect said high pressure compartment (30) with said low pressure compartment (40), wherein said orifices, when open, are 1-25 micrometers in diameter;
    - (iii) there is a mist pipe (22) connecting said low pressure compartment to means for releasing mist from said gas/liquid container.
2. The device of claim 1, wherein said one or more orifices (20) are formed by heating elements attached to said gas/liquid container (31).
3. The device of claim 2, wherein said high pressure compartment (30) further comprises a level sensor (15) and means for mixing the contents of said high pressure compartment.
4. The device of claim 3, further comprising a one-way valve (9) on said liquid pipe (10) and a one-way valve (8) on said gas pipe (11), wherein the opening and closing of said valve on said liquid pipe and said valve on said gas pipe is controlled by said level sensor (15).

5. The device of claim 4, further comprising a pressure gauge (16) connected to said high pressure compartment (30), wherein said high pressure pump (29) can be turned on or off in response to the reading of said pressure gauge (16).
6. The device of claim 5, wherein said high pressure pump (29) is a piston pump and is separated from said high pressure compartment (30) by a diaphragm (28).
7. The device of claim 6, wherein said low pressure compartment (40) is connected to said liquid reservoir (13) by a liquid drain pipe (26).
8. The device of claim 7, further comprising a balloon reservoir (38) connected to said gas line (11).
9. The device of claim 8, wherein said high pressure compartment (30) is connected to a pop off valve (19) and said low pressure compartment (40) is connected to a pop off valve (21).
10. The device of claim 9, further comprising a switch (31) for opening and closing said orifices (20).
11. The device of claim 1, further comprising an ultrasonic nebulizer (45) positioned in front of one or more orifices (20).
12. A method for generating a mist from a liquid, comprising loading said liquid in the device of any one of claims 1-11 and releasing said mist from said low pressure compartment (40) of said gas/liquid container (39).
13. A method for reducing the body temperature of a patient, comprising:
  - (a) administering a mist to said patient by ventilation, wherein:
    - (i) said mist is generated by the device of any one of claims 1-11;

- (ii) said mist comprises a mixture of a physiologically acceptable gas and a physiologically acceptable liquid;
    - (iii) said mist is administered at a temperature below the body temperature of said patient; and
  - (b) maintaining the administration of said mist until said patient's body temperature is reduced.
14. The method claim 13, wherein said mist is administered at a temperature of 1°C-30°C.
15. The method of claim 13, wherein said mist contains liquid droplets with an average size of no more than 2 microns in diameter.
16. The method of claim 13, wherein said mist comprises at least 80% gas by volume and no more than 20% liquid by volume.
17. The method of claim 13, wherein said gas comprises air or oxygen and said liquid comprises saline.
18. The method of claim 13, wherein the body temperature of said patient is reduced in preparation for or during cardiac or neurosurgery.
19. The method of claim 13, wherein the body temperature of said patient is reduced as a treatment for hemorrhagic shock, to prevent brain damage subsequent to a stroke or after resuscitation from cardiac arrest.
20. A method of increasing the body temperature of a patient, comprising:
- (a) administering a mist to said patient by ventilation, wherein:
    - (i) said mist is generated by the device of any one of claims 1-11;
    - (ii) said mist comprises a mixture of a physiologically acceptable gas and a physiologically acceptable liquid;

- (iii) said mist is administered at a temperature above the body temperature of said patient; and
  - (b) maintaining the administration of said mist until said patient's body temperature is increased.
- 21. The method of claim 20, wherein said mist is administered at a temperature of between 37°C and 42°C.
- 22. The method of claim 20, wherein said mist contains liquid particles with an average size of no more than 2 microns in diameter.
- 23. The method of claim 20, wherein said mist is 95-99% gas by volume and 1-5% liquid by volume.
- 24. The method of claim 20, wherein said gas comprises air or oxygen and said liquid comprises saline.
- 25. The method of claim 20, wherein the body temperature of said patient is increased as a treatment for hypothermia.
- 26. A method for creating a mist comprising:
  - a) generating a gas/liquid mixture in a compartment under high pressure; and
  - b) extruding said gas/liquid mixture through one or more openings into an area of lower pressure so that the gas rapidly expands and thereby breaks the liquid into droplets to form said mist.